4,678 COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original on a reduced scale.

GB-07-1953

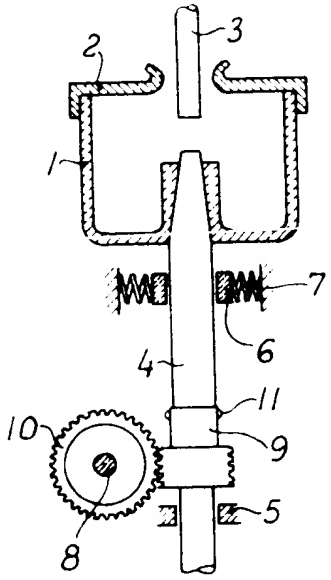

Fig.1

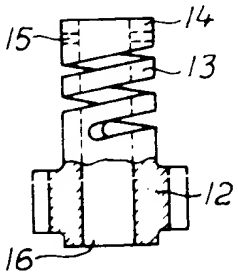

Fig.2

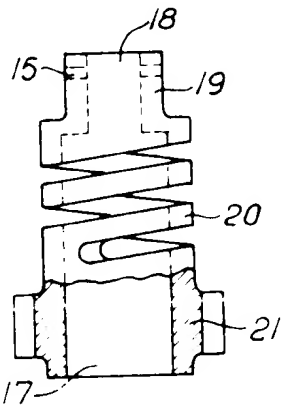

Fig.3

PATENT SPECIFICATION

694,678

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Index at acceptance: **Class 23, I 5c : 80(i); A7 8; and 80(ii),** [illegible]

COMPLETE SPECIFICATION

Improvements in Drive Mechanisms for Centrifuges

We, AKTIEBOLAGET SEPARATOR, a Swedish Company, of S. Fleminggatan, Stockholm, Sweden, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to centrifuges, particularly centrifugal separators, having a vertical spindle supported in a lower fixed and an upper resilient radial bearing and having the worm of a worm gear fixed to the spindle and the corresponding worm wheel fixed to a driving shaft.

In centrifuges of this type the worm is generally made of steel but the worm wheel of some softer material, for example, bronze. Owing to the high speed at which the rotor is operated and the difficulty of balancing it exactly, it is necessary to support the spindle in a fixed and in a resilient bearing so that the rotor can find its own position of equilibrium during the rotation. The result of this is that the spindle performs certain radial movements during [illegible] [illegible] impossible exactly to determine the engagement between the worm and the worm wheel [illegible] [illegible] between the worm and the [illegible] [illegible] thereby subjected to [illegible] [illegible] [illegible] on the worm wheel. [illegible] the pressure between these surfaces continually varies, which contributes to uneven wear and necessitates frequent exchange of worms and worm wheels. An object of the present invention is to [illegible] these inconveniences and to [illegible] [illegible] [illegible] with [illegible] [illegible] [illegible] [illegible] separators with high power consumption.

A drive mechanism for a centrifuge comprises according to the invention a vertical spindle supporting the centrifugal drum and mounted in a lower fixed radial bearing and an upper resilient radial bearing, a worm gearing comprising a worm on the spindle and a worm wheel on a driving shaft for driving the spindle from the shaft and a resilient member for supporting one of the elements of the worm gearing, the worm or the worm gear, on its spindle or shaft, one end of the member being secured to the element and the other end to its spindle or shaft.

The invention will now be described in more detail with reference to the accompanying drawing which illustrates some embodiments thereof by way of example and wherein.

Figure 1 shows diagrammatically a device according to the invention applied to the spindle of the separator, and

Figures 2 and 3 two particular embodiments of a resilient worm.

In Figure 1, 1 denotes [illegible] [illegible] a feed pipe 3. The rotor 1 is [illegible] on the upper end of a vertical spindle 4 [illegible] in a lower fixed and an upper resilient radial bearing 5 and 6, respectively. Springs 7 support the bearing 6 [illegible] to perform oscillations. 8 is [illegible] shaft. Between the latter and the spindle 4 is a worm gear comprising a worm 9 fixed to the spindle 4 and cooperating with a worm wheel 10 fixed to the shaft 8. The worm is fixed to the spindle by a through-running pin 11, and the worm wheel is fixed to the shaft 8 by a wedge (not shown).

Figure 2 shows a worm on a larger [illegible] in section. It consists of [illegible] [illegible] fixed to a sleeve 14 [illegible] 13 forming a screw shaped [illegible]. These parts are [illegible] with one another,

The sleeve 14 is provided with a hole 15 for the pin 11 and a bore 16 for the spindle 4. In this instance, the bore 16 is not larger than is necessary to enable the spindle to be forced into it.

Figure 3 is a modification of the device shown in Figure 2 and differs from it only in that the bore 17 in the worm 21 and the spring 20 is larger than required for the insertion of the spindle, while the bore 18 in the sleeve 19 has the same diameter as that of the spindle.

From the above examples, it will be understood that the worm proper 12 and 21, respectively, when necessary, can perform axial movement along the spindle 4 and also that it can turn a small angle in relation to and about the spindle. In Figure 3, the spindle can also perform a small radial movement owing to the play between the worm and the spring on the one hand and the spindle on the other. According to the invention, this movability of the worm in relation to the spindle contributes to a reduction of the wear between the worm and the worm wheel and to the movements and pressure between these parts being reduced.

Instead of using a resilient worm, a resilient worm wheel may be used, arranged in a corresponding analogous way, without departing from the scope of the invention.

What we claim is:—

1. A drive mechanism for a centrifuge comprising a vertical spindle supporting the centrifugal drum and mounted in a lower fixed radial bearing and an upper resilient radial bearing, a worm gearing comprising a worm on the spindle and a worm wheel on a driving shaft for driving the spindle from the shaft and a resilient member for supporting one of the elements of the worm gearing, the worm or the worm gear, on its spindle or shaft, one end of the member being secured to the element and the other end to its spindle or shaft.

2. A drive mechanism according to claim 1, characterised in that the resilient member consists of a screw-shaped carrying device for the worm.

3. A drive mechanism according to claim 1, characterised in that the worm is fixed to a sleeve by a screw-shaped part and the sleeve is fixed to the spindle.

4. A drive mechanism according to claim 3, characterised in that the worm, the screw-shaped part, and the sleeve are integral with one another.

5. A drive mechanism according to claim 3 or claim 4, characterised in that the worm, the screw-shaped part and the sleeve contact around the spindle.

6. A drive mechanism according to claim 3 or claim 4 characterised in that the screw-shaped part and the worm surround the spindle with a clearance.

7. A drive mechanism for a centrifuge substantially as herein described with reference to Figures 2 or 3 of the accompanying drawings.

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